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NURSING BOTTLE CONSTRUCTION AND ASSEMBLY

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No. OF CLAIMS 4

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NURSING BOTTLE CONSTRUCTION AND ASSEMBLY

10 Disposable nursing containers have come into rather extensive use in recent years and have the advantage of minimizing sterilization of formula containers and nursing bottles for reuse in that these containers may be discarded after feeding. There are various types of such disposable nursing containers which include a container body of thin, flexible and retractile plastic material which is relatively inexpensive and so disposable after a single use. In one form of such containers, the open end of the collapsible bag or container is attached between a clamping ring and the external surface of an adapter to which a nipple is suitably secured. In another type of such containers, the open end of the bag is attached between the nipple adapter and the interior end surface of an outer container or sleeve serving as a rigid holder for the flexible bag and formula disposed therein. In still another form of such containers, the nipple and flexible bag may be formed integrally



with one another and the container pre-filled with formula in sterile condition for subsequent dispensing thereof.

According to the present invention, an object is to provide an integrally formed collapsible bag and nipple annular adapter in sterile condition for subsequent filling with formula and nipple attachment for dispensing.

Another object of the invention is to provide a bag and adapter assembly of the above type wherein the bag may be collapsed within the confines of the adapter as a small unit which may be combined with others in a multiple unit package for retail sale.

A further object of the invention is to provide a bag and adapter assembly substantially of the above type wherein the adapter is further configured for mounting within a more rigid holder which may be in the form of a sleeve enclosing the formula filled bag therewithin.

The invention in its broader aspects herein pertain to a disposable nursing container for receiving a threaded nipple assembly and capable of being snapped within a holder. The container includes an annular nipple adaptor and a bag, the nipple adaptor and bag being formed as one piece from a thermoplastic material. The bag is substantially thinner than the nipple adaptor and formed substantially flexible and collapsible. The peripheral edge portion of the open end of the bag is formed on the upper peripheral rim portion of the nipple adaptor with the bag completely disposed within the nipple adaptor in the collapsed condition of the bag and with the bag pendant through and below the nipple adaptor in the fluid receiving condition of the bag. A snap ring is formed on the lower end of the nipple adaptor for snapping the adaptor on a complementary configured holder, and the outer side wall of the nipple adaptor above the lower end thereof is formed to have threads for receiving a complementary

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formed threaded nipple assembly.

The invention also comprehends a method of making disposable plastic nursing container assembly, which includes the steps of forming an annular plastic nipple adaptor with an integral plastic wall closing the passage therethrough, heating the plastic wall while mainting the integrity of the adaptor and shaping the plastic wall to a thin wall collapsible bag remaining integral with the adaptor.

In the accompanying drawing:

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Fig. 1 is an exploded view showing the various parts of the nursing container and holder;

Fig. 2 is a view showing a multi-unit package of sealed and sterile nursing containers with the bags collapsed within respective adapters;

Fig. 3 is a view showing the nursing container assembled to a holder with the seal being removed for pouring the formula to extend the bag to the dotted line position within the

holder; and

Fig. 4 is a view showing the preform in diagrammatic association with mold parts into which the plastic material is shaped to form the bag.

10 With reference to Fig. 1 of the drawing, the various parts of the assembly are shown separated from top to bottom as a conventional nipple 10; a sealing closure 12 for the outer end of a nipple adapter 14 which has a collapsible bag 16 integral therewith for disposition within a holder 18. The nipple adapter 14 is in the form of an annular sleeve or collar having external screw threads 20 or other surface configuration for attachment to a similar internal configuration on the skirt of the nipple. An annular sealing ledge 22 projects outwardly from the adapter below the threads and an annular snap ring 24 is disposed therebelow for snap engagement with a cooperating snap groove 26 opening inwardly of the upper open end of the holder 18.

20 As illustrated, the bag 16 is formed integral with the upper end of the adapter, as will be hereinafter described, and extends therethrough to the pendent position of Fig. 1 with the interior thereof suitably sterilized and collapsed within the confines of the adapter, the upper end of which is then sealed by the closure 12 affixed thereto. In such sterile condition, this assembly with the bag collapsed within the adapter may be associated with others as a multi-unit package shown in Fig. 2. Such a multi-unit package may be sold separately, or at least in the first instance, it may be sold with a holder 18 and even packaged therein.

For feeding use, an adapter and bag may be removed from the package and associated with the holder by snapping the ring 24 of the adapter into the groove 26 of the holder 18, as shown in Fig. 3. The invention contemplates that the adapter 14 may be provided with internal threads that cooperate with an externally threaded holder 18. The sealing closure 12 is then removed and the formula poured through the open end of the adapter to reposition the bag 16 to depend therefrom as also shown in the dotted line position of Fig. 3. The formula is thus admitted to the sterile or aseptic bag and the nipple 10, previously sterilized, is applied to the threads 20 or other surface configuration on the adapter and the assembly is ready for feeding. The holder 18 while illustrated as frusto-conical to house and support the filled bag, may have other suitable shapes. The holder may be held by the mother or other attendant, or it may be supported by an infant if of that age. Since the holder is of relative permanence, it may be variously decorated, ribbed and the like for attractiveness. After feeding, the ledge 22 serves as a finger gripping surface to remove the adapter and bag from the holder and after removal of the nipple 10, the adapter and plastic bag may be discarded as a disposable unit, leaving the holder for association with another unit at the next feeding.

With reference to Fig. 4 which is diagrammatic, the nipple adapter 14 and domed plastic material 30 closing one end thereof are molded as by injection molding, integrally from suitable plastic materials as a preform with the thread 20, ledge 22 and snap

ring 24 formed on the adapter collar. The thickness of the plastic material of the dome or other configuration across the adapter is such that it can be reshaped and stretched into the collapsible plastic bag portion. Thus, the assembly of adapter and plastic closing wall 30 provides an intermediate article of manufacture from which the above described nursing container is made. Thus, for example, the preform can be associated with mold parts 32, 32a (Fig. 4) at the open end thereof, with the interior surfaces of the mold conforming to the configuration of the bag. The material of the plastic closure or dome 30 may be heated in known manner, as by radiant heat, and without heating of the adapter which has been preformed as indicated. When the material of the dome is sufficiently heated, a conventional thermoforming plug is pushed against the dome in the direction of the arrow X forming the material through the adapter to an initial position within the mold to serve as a parison blank which is then shaped to the bag configuration 16 as shown in dotted lines. This shaping can be accomplished by differential pressure as, for example, by air under pressure through the forming plug or by vacuum applied within the mold. After cooling and removal, the finished bag and adapter will be as shown in Fig. 1 with the bag lining the interior surface of the adapter collar but with other molding techniques, the plastic material closure of the preform could be initially associated with the adapter at other locations as across the bottom or an intermediate portion thereof.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A disposable nursing container for receiving a threaded nipple assembly and capable of being snapped within a holder, said container comprising an annular nipple adaptor and a bag, said nipple adaptor and bag being formed as one piece from a thermo-plastic material, said bag being substantially thinner than said nipple adaptor and formed substantially flexible and collapsible, the peripheral edge portion of the open end of said bag being formed on the upper peripheral rim portion of said nipple adaptor with said bag completely disposed within said nipple adaptor in the collapsed condition of said bag and with said bag pendent through and below said nipple adaptor in the fluid receiving condition of said bag, a snap ring formed on the lower end of said nipple adaptor for snapping said adaptor on a complementary configured holder, and the outer side wall of said nipple adaptor above said lower end thereof being formed to have threads for receiving a complementary formed threaded nipple assembly.

2. A disposable nursing container as claimed in Claim 1, and a removable closure sealed over the upper peripheral rim portion of said nipple adaptor with said bag collapsed within said nipple adaptor.

3. The method of making disposable plastic nursing container assembly, which includes the steps of forming an annular plastic nipple adaptor with an integral plastic wall closing the passage therethrough, heating the plastic wall while maintaining the integrity of the adaptor and shaping the plastic wall to a thin wall collapsible bag remaining integral with the adaptor.

4. The method of Claim 3 with the plastic wall of dome shape at the upper end of the adaptor and shaped through the passage therethrough to form the collapsible bag dependent from the upper end of the adaptor and lining the passage therethrough.



Fig. 1

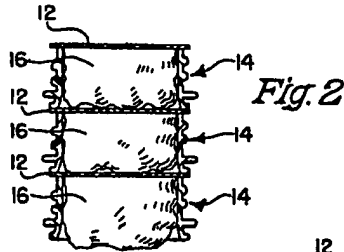
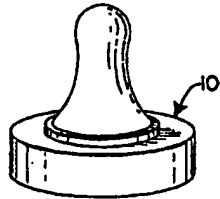


Fig. 2

Fig. 3

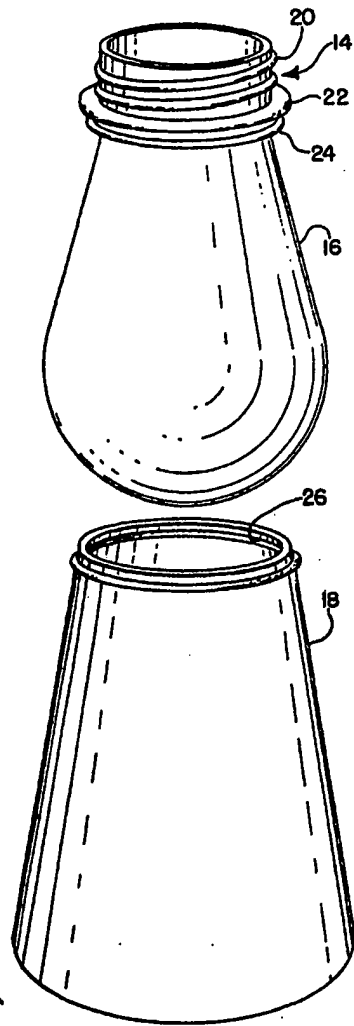
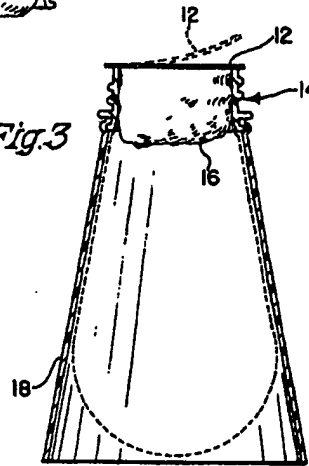
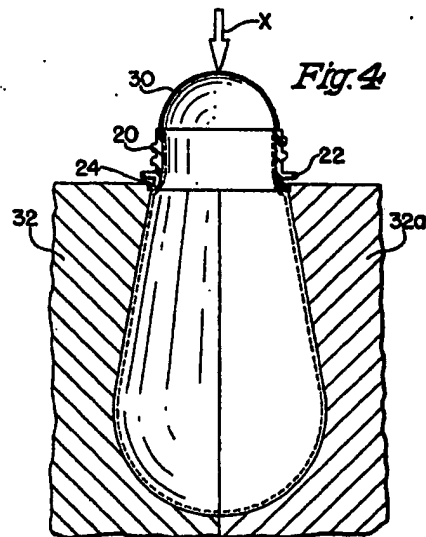


Fig. 4



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